REMARKS

The independent apparatus and method claims have been amended to more clearly identify the inventive subject matter. The amendments are supported by the specification, and the basis for the amendments may be found in the description at page 1, paragraph 1; page 3, lines 1 and 2, and lines 19 and 39; page 5, lines 13 to 22; and page 5, line 34 to page 6, line 1. It is respectfully submitted that the application presently claims patentable subject matter.

The cardiac defibrillation apparatus of the present invention comprises two parts, namely a circuit which is external to a subject receiving defibrillation treatment, and a circuit which is implanted in the subject. The claims, as amended, clearly indicate that the external circuit of the present invention generates pulses which are suitable for defibrillating a heart, and transfers these pulses to the implantable circuit.

More particularly, the external circuit comprises a signal generating means which operates to produce shaped radio frequency pulses, and to emit these pulses via a transmitting coil. The implantable circuit comprises a receiving coil which operates to receive pulses from the external circuit, and a rectification circuit which receives the pulses from the receiving circuit and outputs the pulses to electrodes implanted in the heart of the subject. It is clear from the description of the present invention that the radio frequency pulses generated and emitted by the external circuit have energy levels which will cause defibrillation of the heart of a subject. The implantable circuit receives these defibrillation pulses, shapes them using the rectification circuit, and outputs them to the electrodes in the heart. The implantable circuit does not add to the energy levels of the pulses which it receives from the external circuit, as these energy levels are already sufficient for defibrillation. The implantable circuit is described as being passive, i.e., it does not require any implanted power source.

Therefore, there is no element within the implantable device that can generate signals of sufficient energy to act as defibrillation signals, nor any element within the implantable circuit which could add energy to signals received by the implantable circuit. The primary advantage of

such an implantable circuit is that it allows the production of a less complex and more cost effective implantable device, as compared to the prior art. The presently claimed invention further operates as well as conventional implantable defibrillation devices, which generate the defibrillation signals inside the subject, at a reduced cost of construction and reduced complexity of operations. The present invention also permits implantation of the device in a subject for extended periods of time, since there are no elements, such as power supplies, which require replacement over the lifetime of the subject. Prior art defibrillation devices teach implantable power supplies which could require replacement within the lifetime of the subject, even if the supply can be recharged transcutaneously.

Turning to the prior art documents cited by the Examiner, Koshiol et al. discloses a method and system for recording changes to programmable parameters in an implantable pulse generator. The purpose of this invention is to allow the implantable device of this invention to be interrogated by external means, for example to allow a clinician to review the parameter changes. One embodiment of the implantable pulse generator of this invention comprises an implantable cardiac defibrillator (Fig. 3). It is clear from the description of the operation of this defibrillator that the defibrillator signals are produced by the implantable device itself (note that this comprises a power source in the form of battery 454, Fig. 4). There is no disclosure whatsoever of defibrillation signals being produced by an external device, such as the medical device programmer 420, and being transferred transdermally to the implantable device.

Prem et al. discloses a device for transcutaneously transmitting power and communication signals to an implantable device. The power signals are used by the implantable device for its normal operation. The power signals are not transferred by the implantable device to electrodes to defibrillate a heart. There is therefore, again, no disclosure of defibrillation signals being produced by the external device and being transferred to the implantable device.

Neither of the documents cited by the Examiner disclose the essential feature of the present invention of generation defibrillation signals external to the subject and transferring these to an implantable device. Therefore, a combination of these documents cannot render the present

invention as claimed obvious. The independent claims are therefore considered to be allowable, as are the remaining claims since these are dependent on allowable independent claims.

It is respectfully requested that the Examiner take the amendments and arguments now filed into consideration, and find this application allowable. Enclosed is a petition for a one-month extension of time with required fee.

Respectfully submitted,

Date: 4/19/06

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